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09/672,437	09/28/2000	James R. Halladay	IR-2763(MH)	8158

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EXAMINER

NGUYEN, KIMBERLY T

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 02/13/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/672,437

Applicant(s)

HALLADAY ET AL.

Examiner

Kimberly T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the at least on hoop wound fiber" in lines 28-29. There is insufficient antecedent basis for this limitation in the claim. ✓

The term "substantially" in claims 15 and 18-20 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. ✓

In claim 30, it is not clear how the "at least one fiber *surrounds* a section of the first composite layer." ✓

In claim 44-46, it is not clear what a "longitudinal fiber" is. ✓

Claim 46 recites the limitation "*the* outside of the shim" in the second line of claim 46. There is insufficient antecedent basis for this limitation in the claim. ✓

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 and 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Dudek, U.S. Pat. No. 3,869,113.

Dudek shows a high load damper laminate (composite shim) comprising a plurality of elastomeric layers including at least one circumferentially-oriented cord (fiber) (first and third composite layers and sublayers) (column 3, lines 10-53) and a plurality of elastomeric layers including at least one axially and biaxially-oriented cord (uniaxial fiber) (second and third composite layers and sublayers) wherein the elastomeric layers are laminated together (Figure 3C and column 3, lines 10-53). Dudek shows that cords in the elastomeric layers are aligned at an angle to the axis of the inner and outer members (claim 4). Dudek shows that the laminate is a polyester-calendered fabric (polymeric material) (claim 11). Dudek shows fibers in the elastomeric layers which are concentrically and axially-oriented (arcuate-shaped fibers) (Figures 2, 3A, 3B, and 3C) so that the fibers form concentric rings.

Claims 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Dudek, U.S. Pat. No. 3,869,113.

Dudek shows a high load damper laminate (composite shim) comprising a plurality of elastomeric layers including at least one circumferentially- and concentrically-oriented cord (fiber) which surrounds a section of the elastomeric layers (column 3, lines 10-53 and Figures 3A-3C).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-8, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudek, U.S. Pat. No. 3,869,113 in view of Williams et al., U.S. Pat. No. 5,363,929.

Dudek is relied upon as above for claims 1-2, 4-7, and 11.

Dudek does not specifically show at least four elastomeric layers with the axial cords (second composite layers including sublayers) as in instant claim 8. Dudek does not specifically show at least four elastomeric layers with axial cords (third composite layer including sublayers) as in instant claim 8. However, the number of layers is a property which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the number of layers, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operating conditions (e.g. number of layers) fails to render claims patentable in the absence of unexpected results. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use more than four layers since Dudek teaches that a *plurality* of elastomeric layers can be used to increase load bearing capacities of the damper (column 1, lines 17-21).

Dudek does not show that the axes in the elastomeric layers are arranged in a 0°, +45°, -45°, and 90° orientation or 90°, -45°, +45°, and 0° orientation as in instant claim 9. Williams shows a motor composite comprising layers of fibers oriented in at an angle of 0°, +/- 45°, and 90° (column 5, lines 17-68 to column 6, lines 1-58). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to orient the fibers in a damping

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composite in the arrangement of the instant invention in order to optimize torsional strength, bending flexibility, and ability to withstand compression loads. Further, the angle of orientation is a property which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the angle of orientation, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operating conditions (e.g. angle of orientation) fails to render claims patentable in the absence of unexpected results.

Dudek does not show that the cords (fibers) are carbon, graphite, glass, aramid, or boron as in instant claim 13. Williams shows that the reinforcing fibers include carbon, glass, or aramid fibers (column 4, lines 43-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use such fiber materials since they have various desirable strength, stretch, and cost characteristics.

Dudek does not show that the laminate comprises an epoxy as in instant claim 12. Williams shows that any suitable resin can be used to form the matrix body such as a thermoset epoxy resin (column 4, lines 57-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an epoxy in a laminate structure for damping or reducing compression loads since epoxy is known to be used in such art for its compatibility with the reinforcing fibers.

Dudek does not show the thickness of the damper as in instant claim 14. "Thickness" is a property which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the thickness, absent a showing of unexpected results, it is obvious to modify the

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conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operating conditions (e.g. thickness) fails to render claims patentable in the absence of unexpected results.

Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clinard, Jr., U.S. Pat. No. 4,108,508 in view of Dudek, U.S. Pat. No. 3,869,113.

Clinard shows a composite shim comprising at least four elastomeric layers (resilient layers) and at least three layers of nonextensible material reinforced with high strength fibers (shims) (column 5, lines 13-32). Clinard shows that the elastomeric and nonextensible layers are laminated in an alternating manner (Figure 2).

Clinard does not show that the fibers are circumferentially-oriented as in instant claim 21. Dudek shows a high load damper wherein the cords are circumferentially-oriented (Figure 3A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use reinforcing fibers in a circumferential orientation because the fibers' orientation increases load bearing capabilities and torsional stress capabilities of the composite.

Clinard does not specifically show that the nonextensible fibers comprise axially-oriented fibers and that the non-extensible layers are laminated to one another (first, second, and third composite layers and sublayers) as in instant claims 22 and 23. Clinard does not specifically show that the non-extensible layers comprise a plurality of sublayers as in instant claim 24. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple layers since Clinard shows that the number of layers (sublayers) may be varied to suit the space and/or loading requirements of the composite (column 5, lines 19-22).

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Clinard does not show that the fibers in the non-extensible layers are uniaxial as in instant claim 25. Dudek also shows that the fibers can be arranged in an axial and uniaxial manner (Figures 3B and 3C). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use axial fibers in a plurality of layers to achieve higher load bearing capabilities.

Claims 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clinard, Jr., U.S. Pat. No. 4,108,508 in view of Dudek, U.S. Pat. No. 3,869,113 in view of Williams et al., U.S. Pat. No. 5,363,929.

Clinard and Dudek are relied upon as above for claims 21-25. Clinard shows that the number of layers (composite sublayers) may be varied to suit the space and/or loading requirements of the composite (column 5, lines 19-22).

Clinard does not show that the fibers in adjacent layers are arranged so that they are offset by an angle as in instant claim 26. Clinard does not show that the axes in the elastomeric layers are arranged in a 0°, +45°, -45°, and 90° orientation or 90°, -45°, +45°, and 0° orientation as in instant claim 28.

Williams shows a motor composite comprising layers of fibers which are offset by an angle (Figures 3-5). Williams further shows that the fibers are oriented in at an angle of 0°, +/- 45°, and 90° (column 5, lines 17-68 to column 6, lines 1-58). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to orient the fibers in damping composite layers in the arrangement of the instant invention in order to optimize torsional strength, bending flexibility, and ability to withstand compression loads. Further, the angle of orientation is a property which can be easily determined by one of ordinary skill in the

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art. With regard to the limitation of the angle of orientation, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operating conditions (e.g. angle of orientation) fails to render claims patentable in the absence of unexpected results.

Clinard does not show the thickness of the damper as in instant claim 29. "Thickness" is a property which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the thickness, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operating conditions (e.g. thickness) fails to render claims patentable in the absence of unexpected results.

Claims 30-36, 38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudek, U.S. Pat. No. 3,869,113 in view of Williams et al., U.S. Pat. No. 5,363,929.

Dudek is relied upon as above for claims 30-32. Dudek shows a plurality of layers (first, second, and third composite layers) including a plurality of axial fibers (Figure 1). Dudek shows that the laminate structure includes layers which are alternating and comprise surrounding fibers and axial fibers (Figures 1-3C). Dudek further shows that the layers of the elastomeric, fiber-reinforced layers include axial fibers which are oriented at a positive rotational angle in one layer and at a negative rotational angle in another layer (column 3, lines 53-58).

Dudek does not show that the circumferential fibers are comprised of a spiral as in instant claim 33. Williams shows a motor composite comprising layers of fibers which are offset by an angle and spiral around the laminates for the length of the motor composite (Figures 3-5). It

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would have been obvious to one of ordinary skill in the art at the time the invention was made to orient the fibers in damping composite layers in the spiral arrangement of the instant invention in order to optimize torsional strength, bending flexibility, and ability to withstand compression loads.

Claims 30, 33, 37, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudek, U.S. Pat. No. 3,869,113 in view of Williams et al., U.S. Pat. No. 5,363,929 in further view of Hatch, U.S. Pat. No. 4,207,778.

Dudek is relied upon as above for claim 30. Williams is relied upon as above for claim 33.

Dudek does not show that one of the layers includes a plurality of *radial* fibers as in instant claim 37. Dudek does not show at least one elastomeric layer comprising a plurality of radially extending and uniaxial fibers as in instant claim 39.

Hatch shows a reinforced cross-ply composite comprising a plurality of fiber-containing layers wherein the fibers are parallel to each other and extend in radial directions (column 1, lines 44-64 and Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use radially extending and parallel (uniaxial) fibers because fibers arranged in this way exhibit high strength-to-weight ratios and better load carrying abilities.

Claims 30 and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudek, U.S. Pat. No. 3,869,113 in view of Clinard, Jr., U.S. Pat. No. 4,108,508.

Dudek is relied upon for claim 30. Dudek shows that the damper is cylindrical (Figure 1). Dudek shows that the damper has an axis in the center of the damping wherein the fibers

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surround the axis (Figures 2-3C). Dudek shows that the fibers are longitudinal (Figure 1).

Dudek does not show that the damper is frustroconical as in instant claim 41.

Clinard shows a frustroconical laminated bearing comprising a plurality of elastomeric and non-extensible layers (column 5, lines 13-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use frustroconical bearings or shims in order to effectively respond to rotational loads or forces and compressive loads.

Claims 30 and 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudek, U.S. Pat. No. 3,869,113 in view of Hatch, U.S. Pat. No. 4,207,778.

Dudek is relied upon as above for claims 30 and 42-44. Dudek does not show that the damper comprises at least one longitudinal fiber that extends diametrically as in instant claim 45.

Hatch shows a reinforced cross-ply composite comprising a plurality of fiber-containing layers wherein the fibers are parallel to each other and extend from one end of the layer to the other end (diametrically) (column 1, lines 44-64 and Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use diametrically extending fibers because fibers arranged in this way exhibit high strength-to-weight ratios and better load carrying abilities.

Claims 30, 42-44, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dudek, U.S. Pat. No. 3,869,113 in view of Hatch, U.S. Pat. No. 4,207,778.

Dudek is relied upon as above for claims 30 and 42-44. Dudek does not show that the damper comprises at least one longitudinal fiber which extends around the outside of the damper as in instant claim 46.

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Hatch shows a reinforced cross-ply composite comprising a plurality of fiber-containing layers wherein the fibers are parallel to each other and extend from one end of the layer to the other end (column 1, lines 44-64 and Figure 1). Hatch further shows that the strengthening of the invention is accomplished by adding parallel circumferentially extending fibers (longitudinal fiber) in the rim (outside of the shim) (column 4, lines 29-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use longitudinal fibers which extend around the outside of the damper because fibers arranged in this way exhibit high strength-to-weight ratios and better load carrying abilities.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Nguyen whose telephone number is (703) 308-8176. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (703) 308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for before final communications and (703) 872-9311 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

CYNTHIA H. KELLY
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